

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A voltage regulator for use in a charging device of a portable electronic apparatus, comprising:

a transformer having a primary winding and a secondary winding;

a switch circuit being controlled via a control end thereof so as to result in a variable current on said primary winding;

a rectification circuit electrically connected to said secondary winding, and proceeding a charging operation in response to an induced current, wherein said rectification circuit includes a rectifying diode and a capacitor electrically connected to each other in series and further electrically connected to said secondary winding; and

a micro-controller electrically connected to said switch circuit and generating a first pulse width modulation (PWM) signal with a first duty cycle to said transformer until said capacitor has a voltage reaching a maximum voltage when said capacitor has a voltage smaller than a threshold voltage such that said transformer generates a charging current in response to said first pulse width modulation signal, and said micro-controller generating a second PWM signal with a second duty cycle to said transformer until said capacitor has a voltage reaching said maximum voltage by said charging current when said capacitor has a voltage between said threshold voltage and said maximum voltage such that said transformer generates said charging current in response to said second PWM signal, to said control end in response to said charging operation, wherein said ~~PWM signal has a variable~~ first duty cycle is greater than said second duty cycle to permit simultaneously using at least two high power-consumption devices in the portable electronic apparatus.

2. (cancelled).

3. (previously presented) The high voltage regulator according to claim 1 wherein said micro-controller is controlled by a firmware to generate said variable duty cycle.

4. (cancelled).

5. (original) The high voltage regulator according to claim 4 further comprising a comparing circuit electrically connected to said capacitor, and providing an operating condition of said charging operation for the reference of said micro-controller.

6. (previously presented) A method for operating a voltage regulator for providing a charging current to a capacitor of a rectification circuit, comprising steps of:

providing a first pulse signal with a first duty cycle to a transformer till said capacitor has a voltage reaching a maximum voltage when said capacitor has a voltage smaller than a threshold voltage, and said transformer generating said charging current in response to said first pulse signal; and

providing a second pulse signal with a second duty cycle to said transformer until said capacitor has a voltage reaching said maximum voltage by said charging current when said capacitor has a voltage between said threshold voltage and said maximum voltage, and said transformer generating said charging current in response to said second pulse signal,

wherein said first duty cycle is greater than said second duty cycle, wherein the lower second duty cycle permits simultaneously using at least two high power-consumption devices in the portable electronic apparatus.

7. (original) The method for operating a voltage regulator according to claim 6 wherein said first and said second pulse signals are generated by a micro-controller.

8. (original) The method for operating a voltage regulator according to claim 7 wherein said micro-controller is controlled by a firmware to generate said first and said second pulse signals with said first and said second duty cycles.

9. (original) The method for operating a voltage regulator according to claim 6 wherein said first and said second pulse signals are inputted to a primary winding of said transformer.

10. (previously presented) The method for operating a voltage regulator according to claim 6 wherein said rectification circuit includes a rectifying diode and said capacitor electrically connected to each other in series and further electrically connected to a secondary winding of said transformer.

11. (previously presented) A method for operating a voltage regulator for providing a charging current to a capacitor of a rectification circuit for simultaneously using at least two high power-consumption devices in a portable electronic apparatus, comprising steps of:

comparing a voltage of said capacitor with a threshold voltage;

adjusting a duty cycle of a pulse signal according to a comparing result of said voltage of said capacitor with said threshold voltage; and

providing said pulse signal to a transformer until said capacitor has a voltage reaching a maximum voltage, and said transformer generating said charging current in response to said pulse signal, wherein said pulse signal provided to said transformer has a first duty cycle when said capacitor has a voltage smaller than said threshold voltage and said transformer has a second duty cycle smaller than said first duty cycle when said capacitor has a voltage between said threshold voltage and said maximum voltage.

12. (cancelled).

13. (cancelled).